

THERE IS CLAIMED:

1. An optical demultiplexing system for demultiplexing a multiplex which has at least three levels of granularity and includes  $m$  interleaved bands of wavelengths each of which includes  $p$  wavelengths, which system includes a 1-to- $m$  deinterleaving demultiplexer for demultiplexing said multiplex into  $m$  bands of wavelengths and a 1-to- $p$  deinterleaving demultiplexer for demultiplexing each of said  $m$  bands of wavelengths into  $p$  wavelengths, and in which system said numbers  $m$  and  $p$  are mutually prime.
2. The system claimed in claim 1 wherein said 1-to- $m$  deinterleaving demultiplexer uses interleaved band filtering with a periodic transfer function.
3. The system claimed in claim 2 wherein said interleaved band filtering is based on Mach-Zehnder filters or on array waveguide gratings.
4. The system claimed in claim 1 wherein said 1-to- $p$  deinterleaving demultiplexer uses channel filtering with a periodic transfer function.
5. The system claimed in claim 4 wherein said channel filtering is based on Mach-Zehnder filters or array waveguide gratings.
6. An optical multiplexing system for obtaining a multiplex which has at least three levels of granularity and includes  $m$  interleaved bands of wavelengths each of which includes  $p$  wavelengths, which system includes  $m$   $p$ -to-1 interleaving multiplexers, each for multiplexing  $p$  wavelengths into a band of wavelengths, and an  $m$ -to-1 interleaving multiplexer for multiplexing said  $m$  bands of wavelengths into a fiber, and in which system said numbers  $m$  and  $p$  are mutually prime.